

ORIGINAL ARTICLE

Comparison of able-bodied and spinal cord injured individuals' appraisals of disability

J Morris¹, A Swier-Vosnos², J Dusold¹ and C Woodworth¹**Study design:** Survey.**Objectives:** Compare views of disability in able-bodied and spinal cord-injured individuals.**Setting:** United States.**Methods:** A group of able-bodied individuals were asked to imagine that they had sustained a spinal cord injury (SCI), then complete the Appraisals of DisAbility: Primary and Secondary Scale (ADAPSS) as if they were injured. The mean scores of able-bodied individuals on each of the six Subscales was compared with the mean scores of real spinal cord-injured individuals using *t*-tests of independent means.**Results:** Responses of able-bodied individuals was significantly different from real SCI individuals on five of the six Subscales of the ADAPSS.**Conclusion:** Able-bodied individuals' appraisals of disability after imagined SCI are much more negative than the actual appraisals of disability in real spinal cord-injured individuals.*Spinal Cord* (2013) **51**, 338–340; doi:10.1038/sc.2012.169; published online 8 January 2013**Keywords:** spinal cord injury; appraisal of disability; adjustment to disability; views of spinal cord injury

INTRODUCTION

Attitudes of able-bodied individuals toward spinal cord injury (SCI) are important for a number of reasons. First, attitudes of the general public influence the ways in which resources are allocated. For example, if able-bodied individuals understand that it is possible to lead a satisfying life after spinal injury, they are more likely to provide monies for rehabilitation. In addition, the attitudes of non-disabled individuals affect their expectations and, as a consequence, their willingness to interact vocationally and socially with those who have been injured. For instance, an able-bodied individual might be less apt to hire a spinal cord-injured person if they assume that the spinal cord-injured applicant will be despondent or irritable, or they might avoid making a new acquaintance who has an SCI if they believe that person will be preoccupied with their disability and thereby unable to engage in a reciprocal relationship.

There is a literature that helps us to understand how spinal cord-injured individuals interpret their own disabilities.^{1–3} A study by Gerhart *et al.*⁴ examined the attitudes of emergency room-care providers toward quality of life after SCI. Of those providers, only 18 percent imagined that they would be glad to be alive after a spinal injury, whereas 92 percent of the actual spinal cord-injured individuals reported to be glad to be alive. This suggests that those without SCI may have a more pessimistic view of the effects of spinal injury to quality of life. However, a search of the available research suggested that the views of the general public on this topic have yet to be explored.

In 1984, Lazarus and Folkman⁵ introduced the Stress Appraisal and Coping Model (SAC) in which they advanced a theory for understanding the psychological adjustment to SCI. SAC divides

appraisals into two types, primary and secondary. Primary appraisals are the immediate impressions of an individual to a situation or event in terms of the degree to which it is threatening. Secondary appraisals are comprised of the assessments by the individuals of their own capacities to respond to the situation. A scale for measuring appraisals, the Appraisals of DisAbility: Primary and Secondary Scale (ADAPSS), was developed to permit understanding of elements of adjustment relating to this model.⁶ As those authors explained, 'Appraisals are also conceived as both the causes and effects of the coping process. The relationship between appraisals and coping is dynamic and the interplay between these constructs evolves over time.'⁷ Therefore, how an individual appraises a situation will influence how they cope and how they cope with that situation will influence their reappraisal of the situation' (6, p. 222).

The ADAPSS is a 33-item six-point Likert-type scale that was found to have a six-factor structure. Reflecting that six-factor structure, the test is comprised of six Subscales named Fearful Despondency (nine items), Overwhelming Disbelief (five items), Determined Resolve (four items), Growth and Resilience (five items), Negative Perceptions of Disability (five items) and Personal Agency (five items). The ADAPSS was found to have reasonable reliability and validity.⁶

MATERIALS AND METHODS

Subjects in Group A were 135 able-bodied individuals aged 18–70 years, recruited from a US midwestern university and from a population of community-dwelling adults recruited in libraries, who volunteered to complete the study between February 2010 and February 2011. Prior to taking the study, they signed an informed consent page, a requirement to participate in the

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study. In this group, 22% were male and 78% were female subjects. Sixty-four percent of respondents were Caucasian, 17% were African American, 10% were Hispanic, 6% were Asian and 3% identified themselves as Other.

Subjects in Group B were comprised of the standardization sample described in the original work by Dean and Kennedy.⁶ They recruited community-based individuals who were admitted to the SCI unit or received an outpatient appointment between 1999 and 2008 through the National Spinal Injury Center at Stoke-Mandeville Hospital. The 237 subjects ranged in age from 18–81 years or older, and were predominately of British descent (96%). In this group 68% were male and 32% were female subjects. All had sustained SCIs, 64% of whom reported paraplegic injuries and 33% reported quadriplegic injuries.

Group A, after signing the consent form, but before taking the survey, were given the following instructions: Please imagine that 2 years ago you sustained a spinal injury and are paralyzed. Using the following scale, please rate to what extent the statements below reflect *the perceptions you would expect to have if you had sustained a spinal cord injury 2 years ago by clearly circling the appropriate response*. Please respond as quickly as possible as first responses are usually more accurate.

Subjects in Group A were then administered the ADAPSS.

For Group B, after signing a consent form, Dean and Kennedy provided the participants with the following instructions: We are interested in the thoughts that people have about their spinal cord injury and how these thoughts may change over time. Using the following scale, please rate to what extent the statements below reflect *your current perceptions of your spinal cord injury by clearly circling the appropriate response*. Please respond as quickly as possible as first responses are usually more accurate.

Subjects in Group B were then administered the ADAPSS.

All applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during the course of this research.

RESULTS

The results of the current study compared Group A, the able-bodied individuals, with Group B, the SCI persons who were used in the original Dean and Kennedy study.⁶ For group A, the means of aggregate Likkert scores were obtained for each subscale. For Group B, the means of those aggregate Likkert scores were already available.⁶ Comparisons of the means of aggregate scores for Group A and Group B for each Subscale were calculated using independent *t*-tests. Statistically significant differences were found on all Subscales with the exception of the Subscale Growth and Resilience (see Table 1). As the data is ordinal and the underlying assumptions of a continuous and normal distribution may not have been present, a non-parametric test may be more suitable method of data analysis. To ensure the accuracy of our findings, the non-parametric Mann–Whitney *U* was

Table 1 Means and s.d. for ADAPSS Subscales Aggregate Scores and *t*-test results

| Factor | Group A | Group B | t | P-value |
|------------------------------------|--------------|---------------|------|---------|
| | Able-bodied | SCI | | |
| | M (s.d.) | M (s.d.) | | |
| Negative Perceptions of Disability | 23.59 (4.61) | 20.89 (6.21) | 4.56 | <.001 |
| Personal Agency | 15.80 (4.63) | 12.74 (5.27) | 5.80 | <.001 |
| Overwhelming Disbelief | 21.50 (5.18) | 16.44 (6.81) | 7.73 | <.001 |
| Fearful Dependency | 38.54 (8.22) | 33.72 (10.54) | 4.74 | <.001 |
| Growth and Resilience | 12.68 (4.41) | 12.59 (4.99) | 0.18 | .851 |
| Determined Resolve | 10.84 (4.26) | 8.69 (4.41) | 4.76 | <.001 |

Abbreviations: ADAPSS, Appraisals of Disability; Primary and Secondary Scale; SCI, spinal cord injury.

calculated. Again, significantly significant differences were found on all Subscales with the exception of Subscale Growth and Resilience (See Tables 2 and 3).

With the exception of the Growth and Resilience Subscale, the results of comparisons of each of the Subscale means indicate that those in Group A have a significantly more negative appraisal of disability after SCI. Given the high number of subjects and the very low *P*-values, these results were quite robust. In terms of the Growth and Resilience Subscale, the results were nearly identical, and no significant difference was found.

DISCUSSION

With regard to the Subscale of Growth and Resilience, there were no significant differences between the two groups. This suggests that the participants believe that having an SCI would help them appreciate their family and the ordinary things in life, as well as improve their overall view of disability and their capacity to tolerate other negative events. On all the other scales, the able-bodied individuals endorsed items indicating that they have a bleak view of how they would appraise their disability and cope with its effects.

Given the vigorous nature of the results, these findings suggest that US college students have far more pessimistic views of adjustment to SCI than real spinal cord-injured individuals actually report. The able-bodied individuals believe they would have a very negative appraisal of their disability and their capacity to cope with the effects

Table 2 Mann–Whitney *U*-ranks for ADAPSS Subscales

| Subscale | N | Mean rank | Sum of Ranks |
|---|-------------|-----------|--------------|
| <i>Negative Perceptions of Disability</i> | | | |
| | Non-SCI 135 | 213.61 | 28 837 |
| | SCI 232 | 166.77 | 38 691 |
| <i>Personal Agency</i> | | | |
| | Non-SCI 135 | 226.51 | 30 578.50 |
| | SCI 232 | 159.27 | 36 949.50 |
| <i>Overwhelming Disbelief</i> | | | |
| | Non-SCI 135 | 236.24 | 31 892 |
| | SCI 232 | 153.60 | 35 636 |
| <i>Fearful Dependency</i> | | | |
| | Non-SCI 135 | 215.38 | 29 076 |
| | SCI 232 | 165.74 | 38 452 |
| <i>Growth and Resilience</i> | | | |
| | Non-SCI 135 | 186.30 | 25 151 |
| | SCI 232 | 182.66 | 42 377 |
| <i>Determined Resolve</i> | | | |
| | Non-SCI 135 | 220.29 | 29 739.50 |
| | SCI 232 | 162.88 | 37 788.50 |

Abbreviations: ADAPSS, Appraisals of Disability; Primary and Secondary Scale; SCI, spinal cord injury.

Table 3 Mann–Whitney U-Test Statistics for ADAPPS Subscales

| | Negative Perceptions of Disability | Personal Agency | Overwhelming Disbelief | Fearful Despondency | Growth and Resilience | Determined Resolve |
|-------------------------|--|--------------------|---------------------------|------------------------|--------------------------|-----------------------|
| Mann–Whitney U | 11 663 | 9921.5 | 8608 | 11 424 | 15 349 | 10 760.5 |
| Wilcoxon W | 38 691 | 36 949.5 | 35 636 | 38 452 | 42 377 | 37 788.5 |
| Z | −4.085 | −5.865 | −7.203 | −4.324 | −0.318 | −5.017 |
| Significance (2-tailed) | 0 | 0 | 0 | 0 | 0.750 | 0 |

of spinal injury, whereas in reality, many spinal cord-injured individuals have quite positive appraisals and a repertoire of adaptive coping skills.

This strong finding is particularly interesting because we know that reports of psychological well-being, life satisfaction and depression in those who have sustained a SCI is not significantly different than that reported by able-bodied individuals,⁸ but what we learn here is that able-bodied individuals do not know that.

Much of the modern treatment of spinal injury was developed in Great Britain by Sir Ludwig Gutmann, CBE, FRS following World War II.⁹ This treatment was soon brought to the United States by psychiatrists such as Howard Rusk.¹⁰ There are structural differences between the health care systems in the two countries (for example, in Great Britain, spinal-injured individuals have a considerably longer length of stay in hospital and rehabilitation facilities), for more than 50 years, both countries have a history of excellent comprehensive care of spinal-injured individuals that includes not only medical treatment but also psychosocial treatments.

With regard to potential limitations to the generalizability of these findings, there may be some differences between the spinal-injured population in the US as compared to Great Britain. To address any potential differences, a new study is already underway by the current authors in which the ADAPSS is being administered to spinal cord-injured individuals in the US. Further, in terms of generalizability, the original Dean and Kennedy study, male subjects represented 68% of the sample and female subjects 32%, reflective of the fact that there are more male patients among the spinal cord-injured population.^{11,12} Dean and Kennedy did not analyze their data according to gender. In the present study, which utilized a university-based sample, the composition was 32% male and 78% female subjects. There is a dearth of research that addresses gender as it relates to adjustment to spinal injury. However, Krause and Anson¹¹ did directly examine gender issues in this population, and found that female subjects reported higher adjustment scores and fewer problems with physical discomfort than did male subjects. Consequently, there is no reason to believe that if there were a greater proportion of male subjects in the sample of the current study, they would have endorsed better adjustment.

Unfortunately, misconceptions about life after SCI may have a major impact on decision-making by policy makers and those in control of funding (for example, third party payors, governmental agencies and NGOs). Further, the importance of social support on physical and psychological well-being after SCI is well established.^{13,14} Overly negative expectations on the part of able-bodied individuals regarding their own appraisals of an SCI may interfere with their

ability to engage with spinal cord-injured individuals, and provide appropriate opportunities and support.

In addition, consideration of these findings may be useful to clinicians in counseling those with spinal injuries. A major function of the treatment team has traditionally been one of communicating to the newly injured person that it is possible to live a satisfying life after spinal injury.¹⁵ These findings provide data to support the assertion that living successfully with spinal injury may be more attainable than they might have imagined prior to their injury.

DATA ARCHIVING

There were no data to deposit.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

- Galvin LR, Godfrey HPD. The impact of coping on emotional adjustment to spinal cord injury: review of the literature and application of a stress appraisal and coping formulation. *Spinal Cord* 2001; **39**: 615–627.
- Elfstrom ML, Ryden A, Kreuter M, Persson LO, Sullivan M. Linkages between coping and psychological outcome in the spinal cord lesioned: development of SCL-related measures. *Spinal Cord* 2002; **40**: 23–29.
- Elliott T, Kurylo M, Rivera P. Positive growth following acquired physical disability. In: Snyder CR, Lopez SJ (eds). *Handbook of Positive Psychology*. Oxford University Press: Oxford, 2002, pp 687–688.
- Gerhart KA, Koziol-McLain J, Lowenstein SR, Whiteneck GG. Quality of life following spinal cord injury: knowledge and attitudes of emergency care providers. *Ann Emerg Med* 1994; **23**: 807–812.
- Lazarus RS, Folkman S. *Stress, appraisal and coping*. Springer: New York, 1984.
- Dean RE, Kennedy P. Measuring appraisals following acquired spinal cord injury: a preliminary psychometric analysis of the appraisals of disability. *Rehabil Psychol* 2009; **54**: 222–231.
- Monroe S, Kelley J. Measurement of stress appraisal. In: Cohen MS, Kessler R, Underwood G (eds). *Measuring Stress*. Oxford University Press: Oxford, 1995, pp 122–147.
- Schultz R, Decker S. Long-term adjustment to physical disability: the role of social support, perceived control, and self-blame. *J Pers Soc Psychol* 1995; **48**: 1162–1172.
- Silver JR. *History of the Treatment of Spinal Cord Injuries*. Springer: New York, 2003.
- Yanes-Hoffman N, Howard Rusk, MD: An equal chance. *JAMA* 1981; **246**: 1503–1510.
- Krause JS, Anson CA. Adjustment after spinal cord injury: relationship to gender and race. *Rehabil Psychol* 1997; **42**: 31–46.
- Price C, Makintubee S, Herndon W, Istre GR. Epidemiology of traumatic spinal cord injury and acute hospitalization and rehabilitation charges for spinal cord injuries in Oklahoma, 1988–1990. *Am J Epidemiol* 1994; **139**: 37–47.
- Herrick SM, Elliott TR, Crow F. Social support and the prediction of health complications among persons with spinal cord injuries. *Rehabil Psychol* 1994; **39**: 231–250.
- Rintala DH, Young ME, Hart KA, Clearman RR, Fuhrer MJ. Social support and the well-being of persons with spinal cord injury living in the community. *Rehabil Psychol* 1992; **37**: 155–163.
- Morris J. Spinal injury and psychotherapy: a treatment philosophy. In: Yarkony GM (ed.). *Spinal Cord Injury: Medical Management and Rehabilitation*. Aspen Press: Rockville, MD, USA, 1994, pp 223–236.